

### **Remarks**

With this Response, claims 1, 4, 6, 21, and 24 are amended; claims 14-20 are canceled; and new claims 27-33 are added. Upon entry of these amendments, claims 1-13 and 21-33 are pending.

It is respectfully submitted that the amendments are fully supported by the application as originally filed (discussed below) and do not present new matter.

Applicant respectfully requests reconsideration and allowance of the application in view of the above claim amendments and following remarks.

### **Election/Restrictions**

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-13 and 21-26, drawn to a method for vapor depositing plural layers;
- II. Claim 14, drawn to an apparatus for depositing a coating; or
- III. Claims 15-20, drawn to coated product.

Responsive to the restriction requirement, Applicant affirms the election to prosecute the invention of Group I, claims 1-13 and 21-26. Please cancel claims 14-20.

### **Rejections Under 35 U.S.C. § 112**

Claims 6 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In response, claim 6 is currently amended to delete the second occurrence of the word “and” in this claim. The rejection is thus obviated and withdrawal of the rejection is respectfully requested.

Also, claim 24 is presently amended to recite that the step of encapsulating the first and second materials comprises forming an enclosure that comprises a material that is transparent to laser radiation. The rejection is thus overcome by amendment because the limitation “the enclosure” previously recited in line 2 is no longer present. Claim 24, as presently amended, now properly introduces “an enclosure.” It is respectfully submitted that claim 24, as presently

amended, complies with the requirements of 35 U.S.C. 112 and is not indefinite. Withdrawal of the rejection of record is therefore respectfully requested.

**Rejections Under 35 U.S.C. § 102**

Claims 1, 3, 4, 10, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,641,611 to Shieh et al.

The Shieh et al. reference discloses a self-aligned integrated shadow mask that is formed on a substrate by a photolithographic process. This mask is used to define an area of coverage of a thin film deposited on the substrate to define a portion of an organic LED device. Self-aligned masks of this type are well known in the semiconductor photolithography arts. This type mask is formed by depositing a mask layer on a substrate or existing layer or the like, and patterning the mask layer by conventional photolithography techniques to define an opening in the masking layer. Subsequently, a deposition process can be used to deposit a desired material through the opening, which forms an area of deposition material that is at least partly defined by the opening in the mask. Using this type of integrated self aligned mask is an important aspect of the Shieh et al. invention because such a mask is aligned by the process by which the mask is formed and thus does not required an alignment step. That is, the mask is formed in place as part of the entire process of making the Shieh et al. device. Moreover, this type of mask is important to the Shieh et al. invention because organic LED matrices can be fabricated and passivated in one lithography step (see column 1, lines 64-67, for example).

As set forth above, claim 1 is presently amended. This amendment is presented to distinguish claim 1 from the Shieh et al. reference. Claim 1 now recites that a shadow mask and substrate are positioned in a fixture in contrast to the integrated self-aligned mask that is taught in the Shieh et al. reference. Support for this amendment is provided at page 4, lines 21-25 of the present specification as originally filed. Use of a shadow mask that can be positioned relative to the substrate in a fixture, in accordance with an aspect of the present invention, advantageously eliminates the need to use photolithographic techniques to provide such a mask as is specifically and exclusively taught in the Shieh et al. reference. Another advantage related to an aspect of the present invention is that a substrate can be quickly and easily positioned in a fixture with a shadow mask for subsequent deposition. In the same way, the substrate can advantageously be removed from the fixture without further processing.

The Shieh et al. reference does not teach positioning a shadow mask and substrate in a fixture as recited in presently amended independent claim 1. As noted above, the only mask disclosed in the Shieh et al. reference is photolithographically integrated with the substrate as part of a thin film layer structure and not provided in a fixture. Accordingly, the Shieh et al. reference cannot anticipate independent claim 1, as presently amended because the Shieh et al. reference does not teach each and every element of the presently amended claim 1. Withdrawal of the rejection of independent claim 1 as anticipated by the Shieh et al. reference is thus respectfully requested.

Dependent claims 3, 4, and 10, all of which depend from independent claim 1, are also rejected as anticipated by the Shieh et al. reference. Because claims 3, 4, and 10 all depend from independent claim 1, claims 3, 4, and 10 further narrow the scope of independent claim 1. Therefore, because the rejection of independent claim 1 as anticipated by the Shieh et al. reference is believed overcome by the present amendment as set forth above, the same amendment overcomes the rejection of claims 3, 4, and 10 as anticipated by the Shieh et al. reference. Withdrawal of the rejection of dependent claims 3, 4, and 10 as anticipated by the Shieh et al. reference is thus respectfully requested.

Regarding the rejection of independent claim 13 as anticipated by the Shieh et al. reference, the rejection is respectfully traversed.

Claim 13 recites evaporating first material at an angle of incidence normal to a surface of a substrate to form a first area of coverage on the surface of the substrate. Claim 13 further recites that while rotating the substrate on an axis normal to the surface, second material is evaporated at an angle of incidence oblique to the axis (at a non-perpendicular angle to the surface) to form an area of coverage greater than and including the area of coverage of the first material. Simply put, the first material is deposited at an angle normal to the surface and the second material is deposited at a different angle so that the second material covers all of the first material.

Nothing in the Shieh et al. reference teaches or discloses depositing a first material at a normal or perpendicular angle and depositing a second material at a different angle (oblique to the normal) to cover the first material as recited in claim 13. Specifically referring to Figure 11 of the Shieh et al. reference as noted by the Examiner in the Official Action, the only feature shown in Figure 11 of the Shieh et al. reference that can be read as the first area of coverage

recited in claim 13 is item 30 because this is the only feature deposited at an angle of incidence normal to the substrate. The only other possibilities are items 32 and 34, which must be deposited at an angle to the substrate because of the location of the opening of the mask 15. The passivation layer 70 cannot be read as the second material recited in claim 13 because the passivation layer 70 is not deposited at an oblique angle as claimed. Passivation layer 70 is deposited at the same normal angle as item 30. Likewise passivation layers 72 and 74 are deposited at the same angle of incidence as items 32 and 34, respectively. In this regard, the Shieh et al. reference teaches that the passivation sources 71, 73, and 75 can simply replace the red, blue, and green sources 31, 33, and 35 (see column 6, lines 48-50). For at least these reasons, the Shieh et al. reference does not disclose what is recited in claim 13 and cannot anticipate claim 13. Withdrawal of the rejection of record is therefore respectfully requested.

Claims 21-23 and 26 are rejected under 35 USC 102(a) as being anticipated by U.S. Patent Publication 2003/0138656 to Sparks. Claim 21 is an independent claim and claims 22, 23, and 26 depend from claim 21.

The Sparks reference teaches depositing a first layer of a reactive material that is covered and protected by a second layer of a nonreactive material. More particularly, a getter material is covered with a protective layer. This getter material and protective layer are provided in a cavity in which a vacuum is desired to be maintained. By a thermal treatment, the protective layer is interdiffused with the getter material to expose the getter material. The getter material functions like a pump by reacting with gas molecules in the cavity thus removing the gas molecules from the cavity. The purpose of exposing the reactive material of the Sparks reference is to remove gas from the cavity. That is, the getter functions like a pump to remove gas molecules from the cavity.

Claim 21 is presently amended to distinguish from the Sparks reference. Independent claim 21, as presently amended, now recites depositing first material onto a substrate surface, depositing second material over the first material to enclose the first material, encapsulating the first and second materials deposited on the substrate within a cavity, and degrading the second material so that at least a portion of the first material escapes into the cavity. Support for this amendment is provided at page 15, lines 5-7 of the present specification as originally filed. This is essentially opposite from what the Sparks reference teaches. That is, the Sparks reference teaches removing material (unwanted gas) from a cavity. In contrast, independent claim 21

recites that material escapes into a cavity. For at least this reason, the Sparks reference cannot anticipate independent claim 21. Withdrawal of the rejection of independent claim 21 as anticipated by the Sparks reference is therefore respectfully requested.

Dependent claims 22, 23, and 26, all of which depend from independent claim 21, are also rejected as anticipated by the Sparks reference. Because claims 22, 23, and 26 all depend from independent claim 21, claims 22, 23, and 26 further narrow the scope of independent claim 21. Therefore, because the rejection of independent claim 21 as anticipated by the Sparks reference is believed overcome by the present amendment as set forth above, the same amendment overcomes the rejection of claims 22, 23, and 26 as anticipated by the Sparks reference. Withdrawal of the rejection of dependent claims 22, 23, and 26 as anticipated by the Sparks reference is thus respectfully requested.

Claims 21-26 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,900,702 to Youngner et al.

The Youngner et al. reference is directed to a MEMS frequency standard for use in a device such as an atomic clock. The Youngner et al. reference teaches that the frequency standard includes a cell portion. An alkali metal such as rubidium is deposited in the cell portion and the alkali metal is covered with a passivation layer such as an aluminum layer. The cell portion is enclosed with a transparent wall and/or cap so that the alkali metal can be heated by a laser to vaporize the alkali metal. The vaporized alkali metal then fills the cell portion to a saturation vapor pressure at a desired temperature.

The Youngner et al. reference is silent regarding how the alkali metal and passivation layer are deposited in the cell portion. Accordingly, independent claim 21 is presently amended to distinguish from the Youngner et al. reference. Specifically, claim 21 now recites depositing first material onto a substrate surface and depositing second material over the first material from an oblique angle relative to the substrate surface to enclose the first material. Support for this amendment is provided at page 9, lines 18-24 of the present specification as originally filed. As described throughout the present specification, depositing material at an oblique angle advantageously provides improved coverage of the first material. This improved coverage is particularly advantageous for covering reactive materials with a covering or passivating material. Therefore, because the Youngner et al. reference does not disclose each and every element of

currently amended independent claim 21, withdrawal of the rejection of independent claim 21 as anticipated by the Youngner et al. reference is therefore respectfully requested.

Dependent claims 22-26, all of which depend from independent claim 21, are also rejected as anticipated by the Youngner et al. reference. Because claims 22-26 all depend from independent claim 21, claims 22-26 further narrow the scope of independent claim 21. Therefore, because the rejection of independent claim 21 as anticipated by the Youngner et al. reference is believed overcome by the present amendment as set forth above, the same amendment overcomes the rejection of claims 22-26 as anticipated by the Youngner et al. reference. Withdrawal of the rejection of dependent claims 22-26 as anticipated by the Youngner et al. reference is thus respectfully requested.

### **Rejections Under 35 U.S.C. § 103**

Claims 2, 5, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shieh et al. Claims 2, 5, 11, and 12 all depend from independent claim 1. As discussed above, independent claim 1 is amended to include positioning a shadow mask and substrate in a fixture to distinguish from the same Shieh et al. reference. The present amendment to claim 1 also overcomes the rejection of claims 2, 5, 11, and 12. Claims 2, 5, 11, and 12 require the feature of positioning a shadow mask and substrate in a fixture, which limitation is not disclosed, taught, or suggested by the Shieh et al. reference. Withdrawal of the rejection of claims 2, 5, 11, and 12 as anticipated by the Shieh et al. reference is therefore respectfully requested.

Claims 6, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Shieh et al. reference and further in view of U.S. Patent 6,013,538 to Burrows et al. Claims 6, 8, and 9 all depend from independent claim 1. As discussed above, independent claim 1 is presently amended to include positioning a shadow mask and substrate in a fixture to distinguish from the same Shieh et al. reference. The Shieh et al. reference does not teach positioning a shadow mask and substrate in a fixture as recited in presently amended independent claim 1 and as discussed above and is therefore deficient in this regard. The Burrows et al. reference relates to fabricating and patterning organic light emitting diodes and does not describe positioning a shadow mask and substrate in a fixture. As such, the Burrows et al. reference does not cure the basic deficiency of the Shieh et al. reference with respect to presently amended independent claim 1. Thus, because claims 6, 8, and 9 depend from claim 1, the Shieh et al. reference is

deficient in the same way with respect to these claims and the Burrows et al. reference does not cure this deficiency. Withdrawal of the rejection of claims 6, 8, and 9 as being unpatentable over the Shieh et al. reference in view of the Burrows et al. reference is therefore respectfully requested.

Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Sparks reference in view of U.S. Patent 5,929,515 to Greiff et al. Claims 24 and 25 both depend from independent claim 21. As discussed above, independent claim 21 is presently amended to recite encapsulating a second material deposited over a first material in a cavity and degrading the second material so that at least a portion of the first material escapes into a cavity to distinguish from the same Sparks reference. The Sparks reference is not directed to and does not teach or suggest causing material to escape into a cavity by degrading a second material that covers a first material as discussed above and is therefore deficient in this regard. The Greiff et al. reference relates to getter techniques like the Sparks reference and is related to removing material from a cavity or enclosure. That is, the Greiff et al. reference does not teach degrading a covering material so a material covered by the covering material escapes into a cavity. As such, the Greiff et al. reference does not cure the basic deficiency of the Sparks reference with respect to presently amended independent claim 21. Thus, because claims 24 and 25 depend from claim 21, the Sparks reference is deficient in the same way as claim 21 with respect to these claims and the Greiff et al. reference does not cure this deficiency. Withdrawal of the rejection of claims 24 and 25 as being unpatentable over the Sparks reference in view of the Greiff et al. reference is therefore respectfully requested.

#### **Allowable Subject Matter**

Applicant notes with appreciation the indication of allowable subject matter in dependent claim 7. New claim 27 is thus submitted and substantially includes the subject matter of claim 7 in independent form. It is noted that the subject matter of dependent claims 4 and 5 has not been incorporated into new claim 27 because the recitation of the specific materials in claim 7 alone is believed patentable over the prior art of record. Allowance of claim 27 is earnestly requested.

**Conclusion**

In view of the above remarks, it is respectfully submitted that the claims and the present application are now in condition for allowance. Approval of the application and allowance of the claims is earnestly solicited. In the event that a phone conference between the Examiner and the Applicant's undersigned attorney would help resolve any remaining issues in the application, the Examiner is invited to contact said attorney at (651) 275-9806.

Respectfully Submitted,

By: 

Kevin J. Hubbard, Reg. No. 50,717

**Customer Number 33072**

Phone: 651-275-9813

Facsimile: 651-351-2954

Dated: October 31, 2005